

S U P P L Y

OF

W A T E R T O L O N D O N

BY MEANS OF THE

HENLEY AND LONDON

WATERWORKS AND NAVIGATION.

LONDON:

PRINTED BY J. B. NICHOLS AND SON,

25, PARLIAMENT STREET.

SUPPLY

TO

WATER TO LONDON

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SUPPLY OF WATER TO LONDON.

DURING the last forty years public attention has been at intervals aroused to the insufficiency and the impurity of the Water supplied to the enormous population of this Metropolis; and the anxiety upon this subject has taken from time to time the authentic form of Parliamentary inquiries, instituted under the pressure of an avowed and indisputable public evil.

In 1821 a Report was made to the House of Commons upon this subject; but the recommendations it contained had no result.

In 1827 the impurity of the Water supplied to the greater part of London, obtruded itself so forcibly upon the public, and created in London a feeling bordering so closely on indignation, as to give rise to another Parliamentary investigation; but again the Report of the Committee of the House of Commons, in 1828, produced no other practical result than the authorising of Mr. Telford to devise some scheme for supplying this great community with pure Water.

Again the matter slumbered until the year 1834, when Mr. Telford's Report was laid before the House of Commons, and his scheme examined by a Committee of that House. His plan was to introduce into London the waters of the Verulam from the neighbourhood of Watford, but the inadequacy and other defects of the project caused it to be abandoned.

Throughout all this time it has been universally conceded that the water supplied to London is lamentably insufficient for the inhabitants; that the deficiency falls the most severely upon the labouring classes, and that what water is supplied is more or less charged with decomposed animal and vegetable matter, notwithstanding the costly and conscientious efforts made of late years by the Water Companies to get rid of these impurities. And if these facts wanted confirmation, they would derive it most abundantly from the evidence taken in 1844 and 1845 before the Commissioners on the Health of Towns, where clergymen, physicians, extensive owners of houses, and others most conversant with the condition and wants of the population of London, alike bore testimony to the physical suffering and the moral degradation which the want of this great element of life produces.

According to statements which may be relied on, 70,000 houses are absolutely without supply; assuming the number of inhabitants in each of

these houses to be five,—a very low average, unfortunately, for the dwellings of the labouring classes,—350,000 persons must rely upon the scanty, precarious, and troublesome means afforded by the few public wells in London for cooking, and for the means of washing their persons, linen, and houses. How habits of personal cleanliness, and, with it, of self-respect, are thus inevitably sacrificed; how children become squalid and diseased, houses infected, and workmen incapable of performing those daily duties on which the subsistence of their families depends, is amply demonstrated.

The water too in those houses which do enjoy a supply is usually contaminated by the impurities of cisterns, is inadequate to the wants of the inhabitants, and is intermitting; whilst the original cost and subsequent maintenance of the cisterns and apparatus involve the poorer inhabitants in an outlay they can ill bear.

Nor do these facts afford alone a just measure of the existing evil. Upon an adequate flow of water at all times in all parts of a city, the prompt arresting of conflagration depends. Again, to the efficient drainage of a house, and, upon a larger scale, to the sewerage of a district, water in large quantities is indispensable. Even since this brief statement was written, facts have been divulged concerning the condition of whole groups of dwellings in Shoreditch and in Whitechapel—a condi-

tion unfortunately not peculiar to those districts—which show that multitudes of workmen and their families in this great centre of civilization are doomed, by no neglect of their own, to such filth as it is revolting to contemplate; bringing along with it perpetual sickness, premature death, and a kind of desperate recklessness of the ordinary decencies of life. In short, of all the wants of civilized life, a deficient supply of water is among the least tolerable.

To supply this avowed want in London by means so copious as to be equal to any extension of the population which need be contemplated, so simple as to insure economy, and at the same time with due regard to the large interests already vested in existing water-works, is the object now in view; and if, on the one hand, the pecuniary circumstances of the day seem adverse to the success of this project, on the other hand, the public necessity of some such undertaking was never more urgent or more universally acknowledged; and those very pecuniary circumstances will relieve the promoters from the imputation of embarking in this great work with exaggerated hopes of private profit.

The conditions deemed essential to the undertaking are, that the water shall be as pure as can be attained; that the quantity shall be so abundant, for all private and public purposes, as to be within

the reach of the very poor ; and that it shall flow from such a level as to insure constant high service over the greatest part of London without mechanical power.

The source intended to be resorted to is the Thames, in the neighbourhood of Henley, from which the stream will be conveyed with a very gradual decline in a navigable channel nineteen miles in length, until it reaches the Grand Junction Canal at West Drayton, whence it will be conveyed to London, either in the bed of that and the Paddington Canals, or in a separate channel alongside of those navigations.

A reservoir will be formed at Paddington 103 feet above low-water mark of the Thames, a height sufficient to supply the upper floors of very far the larger number of houses in London without mechanical power. It is also proposed to have a High Service reservoir on Primrose Hill, which will be supplied by a very simple hydraulic power obtained from the fall of the water to the lower parts of London.

The experience derived from previous inquiries, and the concurrent testimony of scientific men, have pointed out the Thames as the only adequate source for the supply of the two million persons densely congregated in what, by popular estimation, may be termed London ; and the selection of the water of that great river is approved by the neces-

sities of existing Water Companies, nearly all of which resort either solely or principally to that source. The waters of the Verulam, the Colne, and the Brent, are not sufficient for the supply of London, even if no objection arose from their hardness, and if it were possible to overcome the well or ill grounded opposition of mill owners, whose property depends on maintaining the integrity of those streams.

Upon Artesian Wells scarcely a single engineer would rely for the constant and chief supply of a vast population. Their inadequacy, unless they penetrate the chalk stratum, is admitted by their most zealous advocates. What effects may be produced on them when resorted to for one hundred millions of gallons daily, and how such an exhaustion, if possible, would affect those streams in Hertfordshire already alluded to, which are derived from the chalk formation, are questions which can only be answered at an enormous cost and commensurate risk. And although Artesian Wells, sunk only into the sand, give a remarkably soft water, it may well be doubted whether water pumped from a bed of chalk will not have a hardness which will render it unfit for domestic purposes and injurious to health.

But it is another and insuperable objection to the adoption of Artesian Wells, that the water in them rises only, on an average, thirty feet below

low-water mark at London Bridge, and that mechanical power must therefore be constantly employed according to this system.

The Thames being thus (almost of necessity, certainly most wisely) the source selected, Henley was resorted to, partly because of the purity of the water there, partly because the level of that reach of the river is 106 feet above low-water mark at London Bridge; and, by maintaining that level with a decline of only three feet into Paddington a reservoir may there be formed somewhat above the level of the New River Head, from which water will flow by its own gravitation to the upper stories of most of the houses in London, and all the houses in Westminster and the City; whilst by the fall of the water thence to the lower parts of London a mechanical power (it may be repeated) is derived which will fill the High Service reservoir at the top of Primrose Hill; a situation which commands the highest part of London and its neighbourhood.

It is needless here to enlarge on the advantages derived to the consumer from a perpetual flow of water in any part of his house without the intervention of cisterns, and the machinery attached to them. To the labouring classes, whose dwellings are often confined to a part of a single floor, the advantage of having water perpetually within reach is manifest: and that this continual supply

is not injurious to Water Companies, if they have a quantity of water sufficient for the wants of the population, has been proved by the evidence of the most eminent engineers to those bodies.

The quantity of water intended to be supplied to London is one hundred million gallons daily ; and the present design is not to embark in a competition with established Water Companies, but, on the contrary, to contribute to the efficiency and success of those bodies upon conditions advantageous to the Public ; by enabling the companies, each in its own district, to give to the smallest house in its own limits all the water its inhabitants can want, by perpetual high service, and at a cheap rate. Abundance will still remain to fill the ornamental waters in the parks, to supply fountains, and, above all, to cleanse the drains and sewers of the Metropolis.

The channel between Henley and West Drayton will be navigable, and will have the effect of diminishing the navigable distance between Henley and London by more than twenty miles. A uniform surface will be preserved throughout the whole distance ; and, to maintain the purity of the water, the bed of the whole channel will be formed of concrete.

If objection is urged against this part of the project, either because it interferes with the existing rights in the navigation of the Thames,

or because it may tend to unfit the water for domestic purposes; the former, merely financial impediment, admits of not difficult arrangement, and the latter will be removed by the reflexion that 100 barges a day can produce no effect upon the vast body of water in question; whilst the purity must be deemed absolute, when compared with the water of the Thames even at Chelsea, which has received between that point and Henley the drainage from a population exceeding 75,000 persons, besides the contamination derived from the sewerage of London brought up by the tide, and held in perpetual suspension by the perturbation of steam-boats.

The cost of the undertaking is estimated, and, as the promoters believe, largely estimated, at £750,000. If, however, upon more mature deliberation, it should be found expedient that a separate channel should be made for the water for the whole distance, £250,000 must be added to the expense.

In calculating the revenue to be derived from the undertaking large allowance has been made for the necessity admitted on all hands, and which will probably be enforced by Parliament, of diminishing the cost of water to the labouring classes. All the other Water Companies it can be proved, and to a certain extent the New River Company also, will find it more profitable to buy water from the proposed reservoir and let it flow down their

mains, than to pump it up from their present sources. Assuming them to pay only one penny for 1000 gallons, and that only one half of the whole quantity brought into London by the proposed means produces a pecuniary return, the net annual revenue will amount to more than 9 per cent on the original outlay: whilst the economy of machinery by the high level of the reservoirs, and the nearly unlimited quantity of water, will enable the various Companies, even with increased profit to themselves, not only to supply abundantly the meanest houses in London, but most materially to diminish their charges.

Thus an adequate return for the capital invested may be relied on, and that too in circumstances which insure the permanence of the property, and protect it from all risk of rivalry. And to this consideration may be added the reflection that the pecuniary advantage derived by the promoters of this great undertaking, will be the measure of the public benefit conferred by them in the improvement of the health, the comfort, and the happiness of the vast and increasing population of this Metropolis.

HENLEY AND LONDON WATER-WORKS AND NAVIGATION.

1848

M^CCLEAN & STILEMAN
THO^S E. BLACKWELL } ENGINEERS

Diagram illustrative of the Proposed Works and of the relative levels of some of the principal localities, in and around London

HENLEY

Henley Reach

Proposed New Channel to West Drayton 19 Miles

WEST DRAYTON

Course of Proposed Supply

TOTAL LENGTH 34 MILES

LONDON

Level of High Service Reservoir

High Service Reservoir
Primrose Hill, 190 F^t above Low Water

150
140
130
120
110
100
90
80
70
60
50
40
30
20
10

Paddington Reservoir
103 F^t above Low Water

Level of Paddington Reservoir

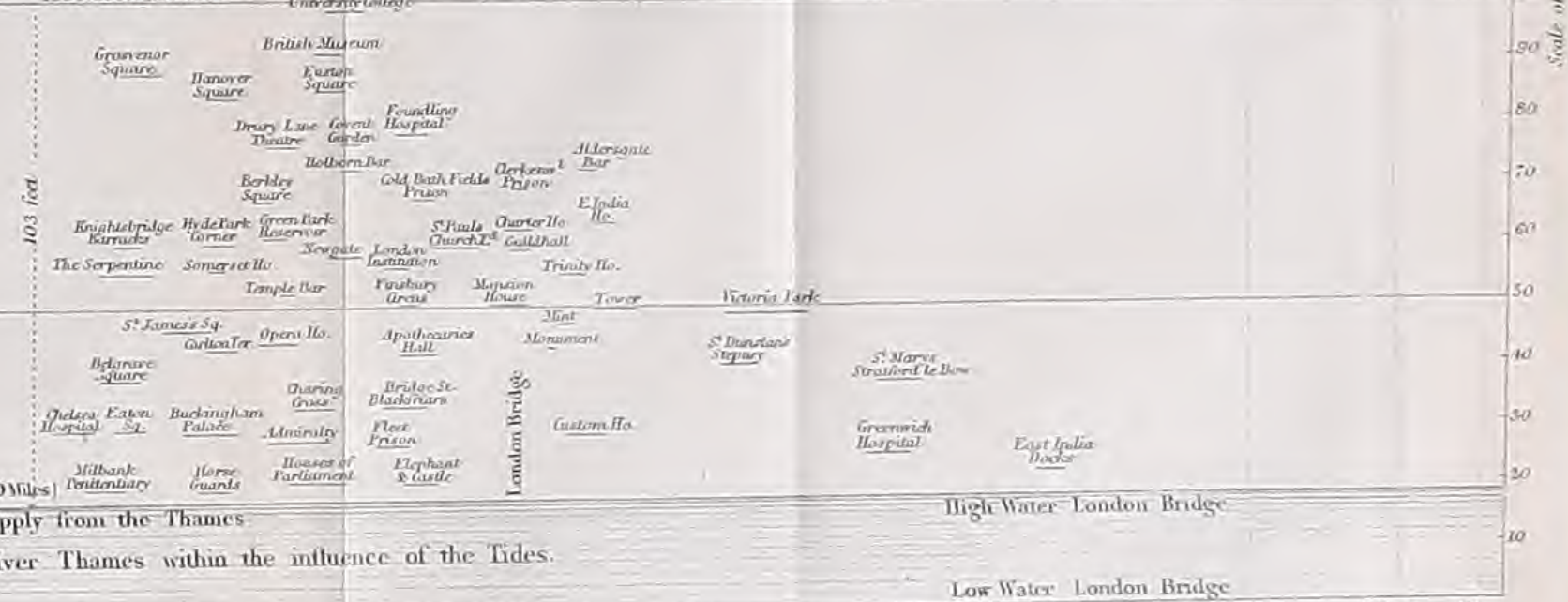


Diagram Low Water London Bridge
G.H. Saunders del.

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WATER WORKS
AND
NAVIGATION.
1848.

MR CLEAN & STILEMAN
THOS E. BLACKWELL } ENGINEERS



Note
The Proposed Works are colored Red.

The dotted lines A B & C D show the
direction of the Sewers referred to in the Prospectus.

Scale 2 Miles = 1 Inch

